UK Firms in International Trade: Facts from Administrative Data and the Impact of Brexit Referendum on UK Exports

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Institution disclaimer

- The author is currently an employee of the Department for International Trade. All of this work reflects the view of the author and cannot be taken to represent those of the Department for International Trade or Her Majesty's Government.
- Part of this presentation builds off work by the author which was conducted while the author was at the Bank of England and was part of a joint project by the author, Tommaso Aquilante, Sandra Batten, Rebecca Freeman, Marco Garofalo and Enrico Longoni. That said, the work reflects the views of the author and cannot be taken to represent those of the Bank of England or any of its policy committees.

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- Part of this presentation was produced using statistical data from ONS. The use of the ONS statistical data in this work does not imply the endorsement of the ONS in relation to the interpretation or analysis of the statistical data. This work uses research datasets which may not exactly reproduce National Statistics aggregates.

Outline

1. Facts on UK firms in international trade from administrative data
2. The impact of renegotiating trade agreements: Evidence from Brexit
3. Do large depreciations lead to export booms?

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Facts on UK firms in international trade from administrative data

- Publicly available data shows how much countries trade with each other and of which products.
- Countries don't import and export - firms do. Many unanswered questions:
  - Which firms are trading? How concentrated is this trade?
  - Which sectors these firms are in? How important they are for employment and output?
- New facts from a newly constructed dataset which links business registry information on the universe of UK firms sourced from the ONS with their customs transactions sourced from HMRC.

How important are firms that trade goods in the UK?

Table: Importance of importing and exporting firms in UK economy

	Firms	Employment (million)	Turnover (£billion)	Export (£billion)	Import (£billion)
Non-trader	3,090,254 (97%)	22.5 (69%)	2,626.0 (49%)	-	-
Exporter	21,427 (1%)	0.6 (2%)	184.3 (3%)	12.5 (4%)	-
Importer	36,116 (1%)	2.0 (6%)	293.1 (5%)	-	32.2 (8%)
Twoway trader	40,100 (1%)	7.6 (23%)	2,273.5 (43%)	274.4 (96%)	377.6 (92%)
Total	3,187,897	32.7 (100%)	5,376.8 (100%)	287.0 (100%)	409.8 (100%)

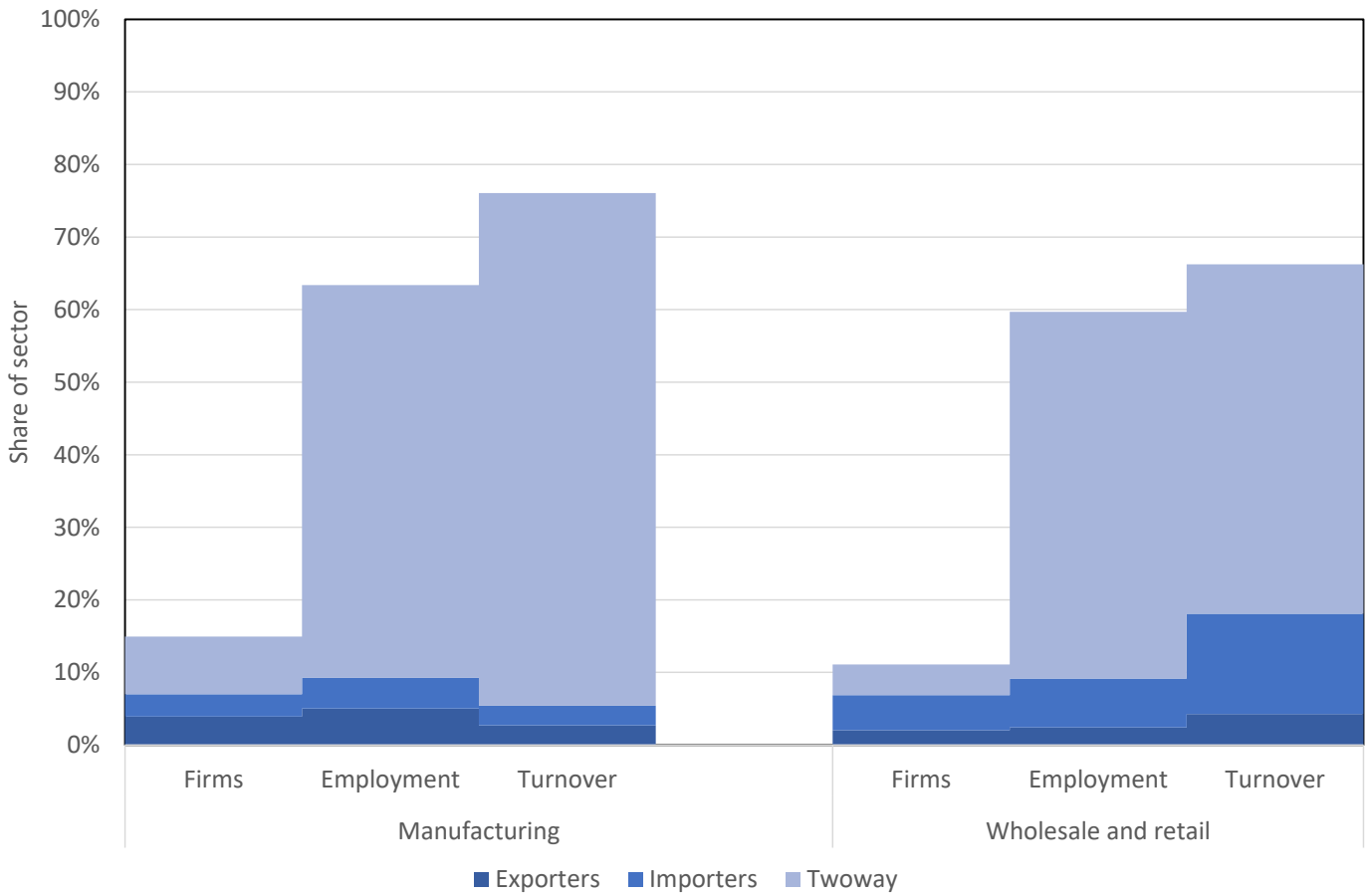
Which sectors trade goods?

Table: Trade in goods is concentrated in manufacturing and wholesale and retail

Sector description	Firms	Employment	Turnover	Exports	Imports
AGRICULTURE	6.4%	1.8%	0.9%	0.3%	0.2%
MINING AND QUARRYING	0.1%	0.2%	0.6%	2.1%	0.3%
MANUFACTURING	4.7%	7.8%	9.8%	55.6%	31.7%
WHOLESALE AND RETAIL	13.6%	15.4%	22%	27.3%	48.1%
TRANSPORTATION	3.9%	4.3%	3.9%	1.7%	3%
OTHER	71.3%	70.5%	62.8%	13%	16.7%

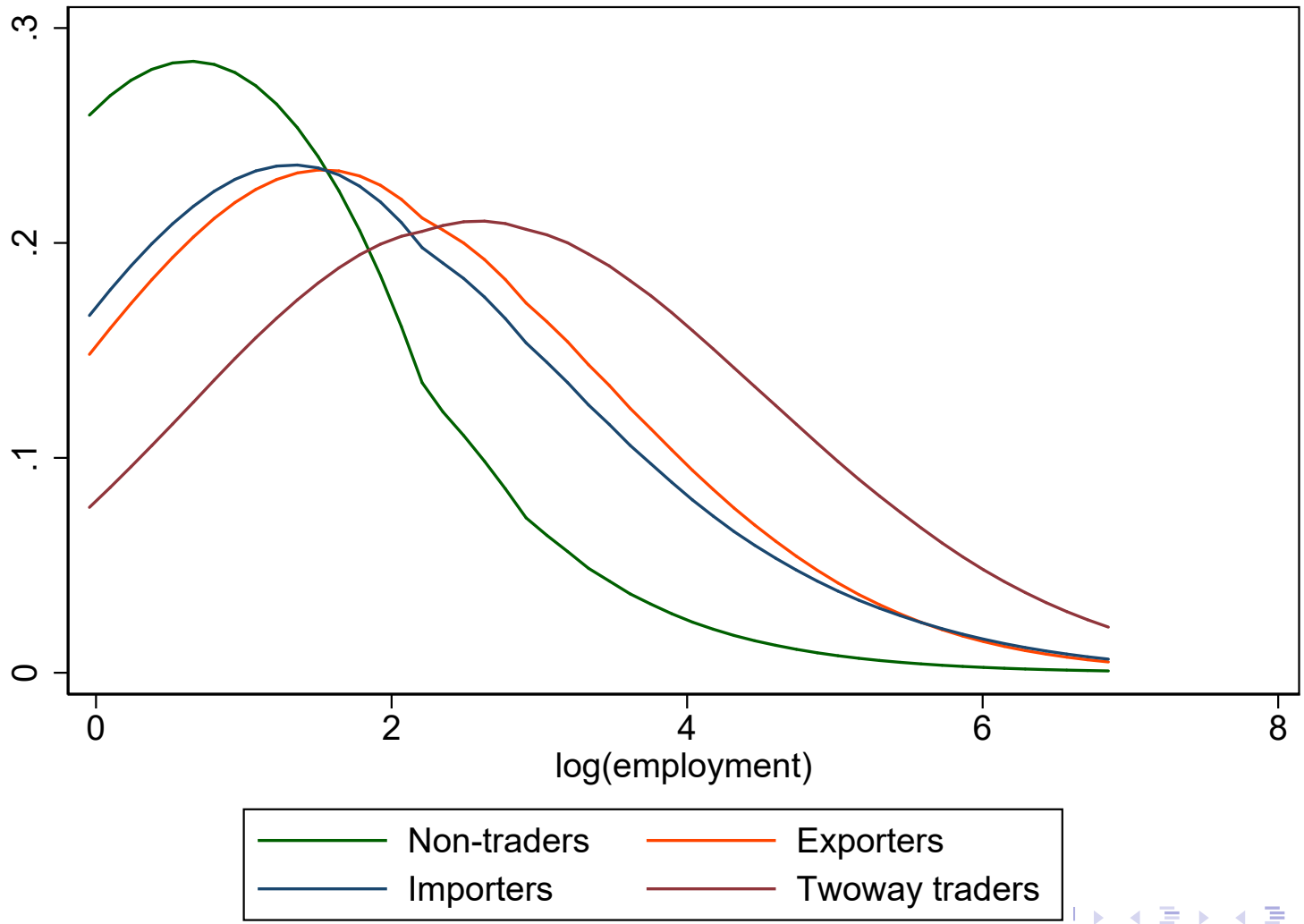
How important are firms that trade in trading sectors?

Figure: Share of economic activity undertaken by importing and exporting firms



Are firms that trade larger and more productive?

Figure: Importing and exporting firms are larger and more productive than non-importing and non-exporting firms (kernel density plots)



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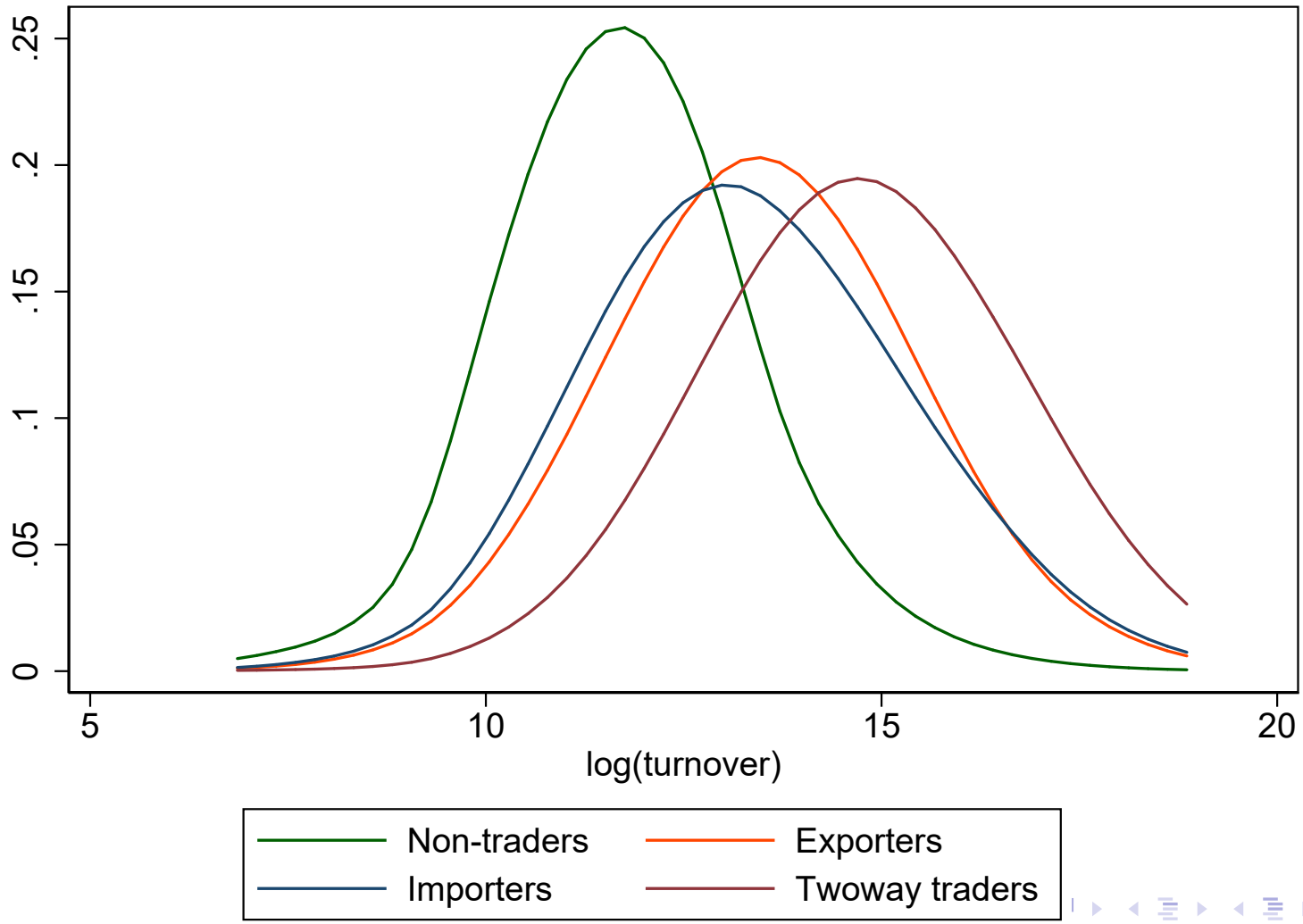

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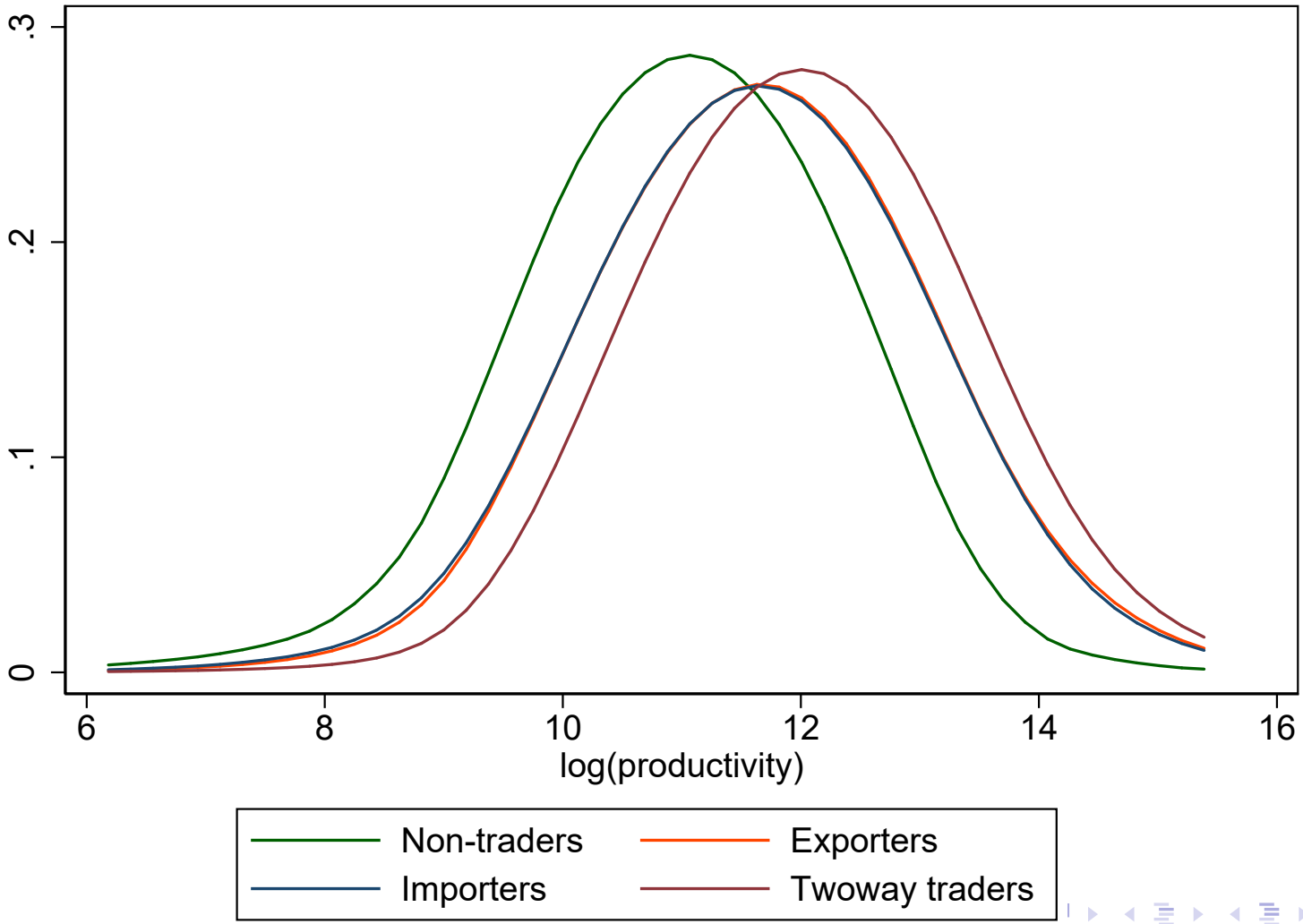

How concentrated is UK trade in goods?

UK goods exports are concentrated amongst the largest exporters.

- The top 10% of exporters (6,000 firms) account for 93% of exports.
- The top 1% of exporters (600 firms) account for 71% of exports.
- Top 10% of exporters are responsible for 10% of employment and 20% of turnover across the whole economy.

Export contribution of the 1st to the 90th percentiles of exporters is small, accounting for only 6% of exports. These smaller exporters still account for over 15% of all employment and 26% of turnover.

Who owns the important importing and exporting firms?

Table: Foreign ownership and affiliates (2017)

	Top 10% of exporters and Top 10% of importers	Top 1% of exporters and Top 1% of importers
Share foreign owned	43%	57%
Share with subsidiaries	38%	57%
Share foreign owned & subsidiaries	19%	35%

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The impact of renegotiating trade agreements

Countries regularly negotiate new, more liberal trade agreements (Canada-EU, CP-TPP, KORUS). Recently, several trade agreements have announced renegotiation with threats that collapse of negotiations will lead to tariff increases (UK in EU, US in NAFTA, KORUS).

Brexit:

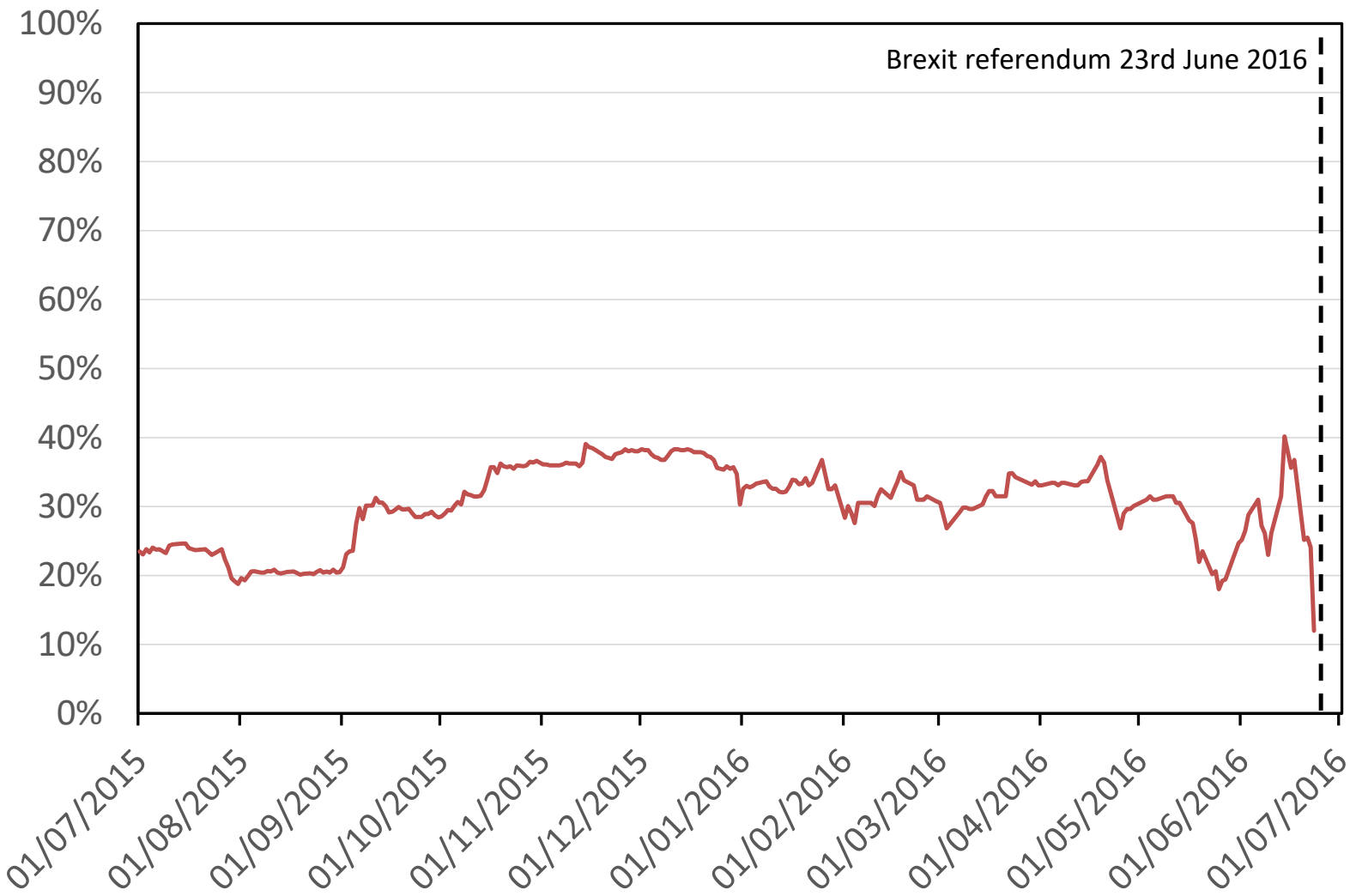
- Leaving the EU is a significant change in the UK's trade policy
- Trade agreements lower trade barriers and provide certainty, the threat that they could be revoked creates a period of uncertainty
- UK firms responded to the threat that tariffs may increase

Brexit: Institutional background

On 23rd June 2016 the British electorate voted to 'Leave' the European Union:

- Government announced that UK would leave Customs Union.
- UK began negotiations with the EU with aims to ensure continued tariff free access to EU markets.
- Outside option or threat point (if no deal is reached) is for UK-EU bilateral trade to be conducted under WTO rules.
- Under WTO rules, UK exports to EU would be charged EU's external tariff rates (defined by EU's WTO tariff schedule).

Brexit - An unexpected switch in trade policy regimes



Tariff rates under EU WTO commitments

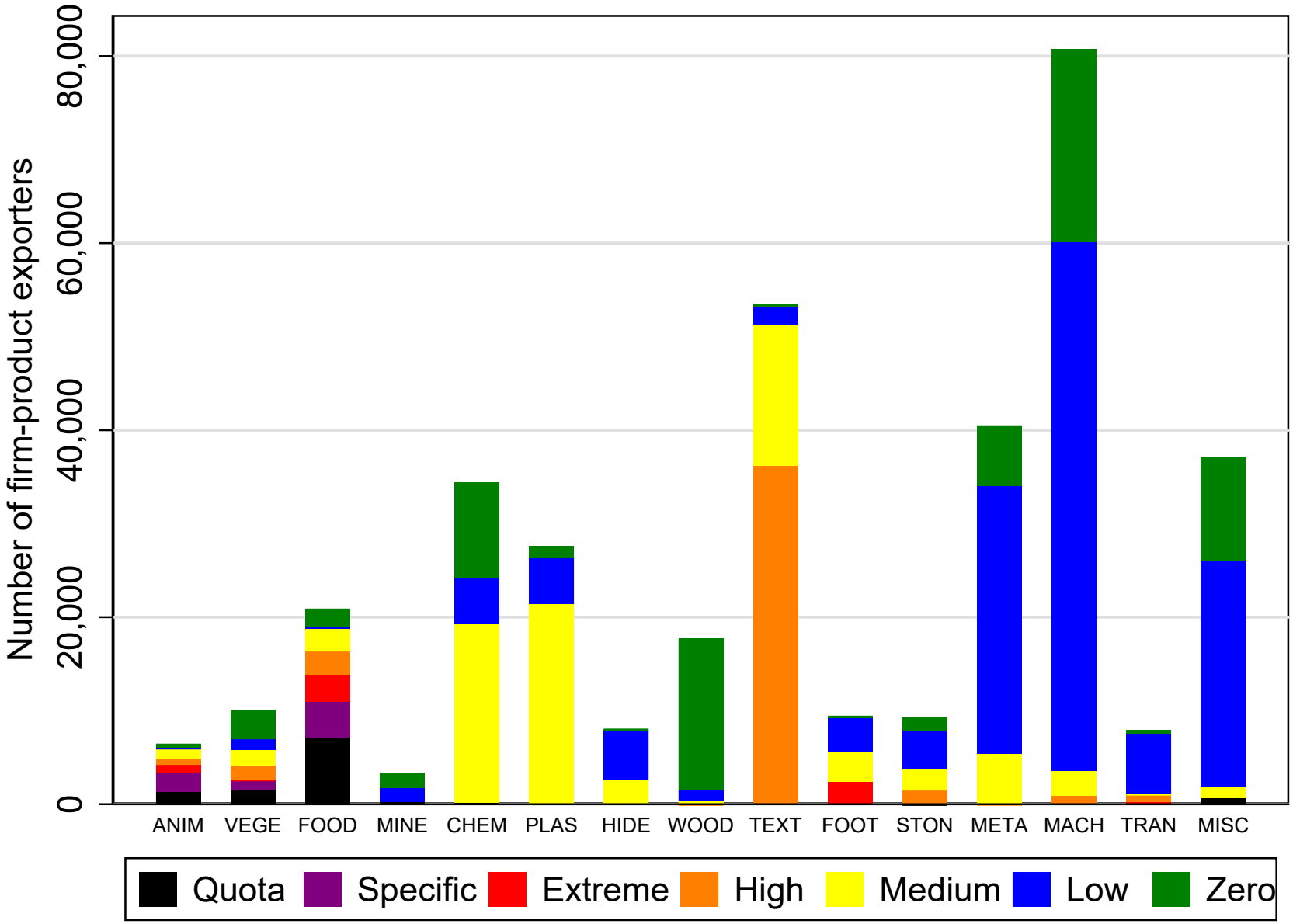
Threat point tariffs that UK-based firms face on exports to the EU are defined by the EU's WTO commitments and WTO tariff schedule.

Classify the 8,500 products exported from the UK to the EU into discrete tariff categories.

Table: Discrete tariff categories

Category	Tariff	Share products	Share exporters
Quota	Tarriff rate quotas	3.7%	1.8 %
Specific Duty	Non ad valorem duty	6.9%	3.1%
Extreme	$\geq 15\%$	4.1%	1.8%
High	$10 - 15\%$	8.0%	12.0%
Medium	$5 - 10\%$	23.4%	21.4%
Low	$0 - 5\%$	29.4%	39.4%
Zero	0	24.5%	20.0%

Tariff exposure across product categories of UK-EU exports



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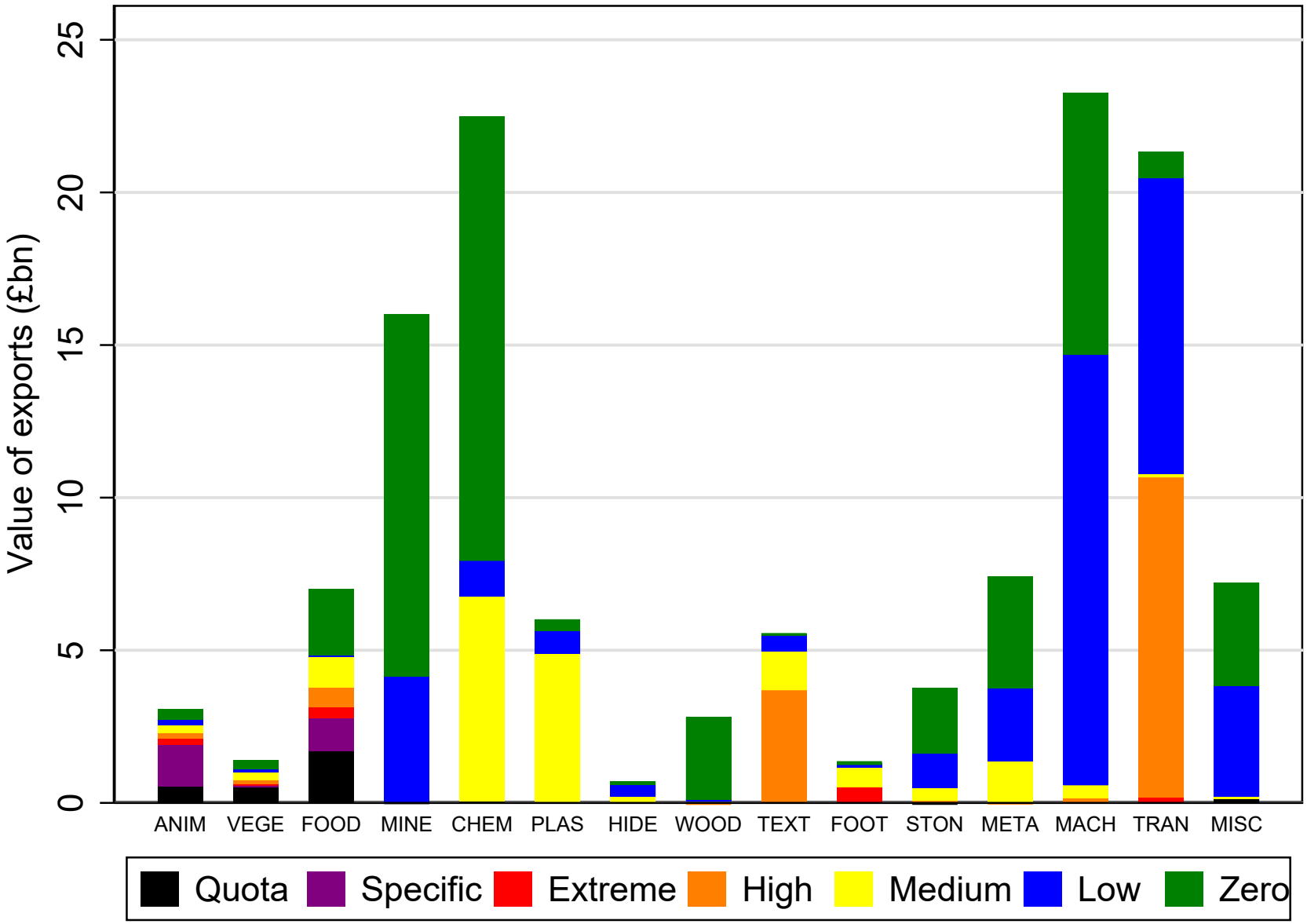

Empirical predictions for UK based firms

Entry

Products facing higher threat point tariffs will experience **decreased entry** during renegotiation relative to products facing lower threat point tariffs.

Exit

Products facing higher threat point tariffs will experience **increased exit** during renegotiation relative to products facing lower threat point tariffs.

Exporters

Products facing higher threat point tariffs will experience **fall in number of exporters** during renegotiation relative to products facing lower threat point tariffs.

Empirical model

Entry

$$\Delta\, entrants_{h,t} = b_0 + b_1 \tau_{h,t}^{threat\ point} + \eta_{h,t}$$

Exit

$$\Delta\, exiters_{h,t} = b_0 + b_1 \tau_{h,t}^{threat\ point} + \eta_{h,t}$$

Exporters

$$\Delta\, exporters_{h,t} = b_0 + b_1 \tau_{h,t}^{threat\ point} + \eta_{h,t}$$

UK customs data

- Information on the universe of firm exporting decisions is obtained from the UK HMRC Overseas Trade Statistics databases.
- Empirical analysis conducted at the firm-product level.
- Entry is defined as an export of product h by a firm f to the EU at time t after no observed export at time $t-1$ of that product h by firm f.
- Exit is defined equivalently as a firm-product export in year $t-1$, but not t.

Table: Total value and number of UK-based firms exporting to EU

	Export value	No. exporters	No. entrants	No. exiters
2013	£146	337,072	96,328	87,407
2014	£142	350,259	98,180	84,993
2015	£129	367,107	102,002	85,154
2016	£139	383,669	105,862	89,300

Main findings

Products facing higher threat point tariff rates experience

- reduced entry
- increased exit

relative to industries facing low or zero tariff increases.

Results are robust:

- Control for industry sensitivity to exchange rate.
- Control for supply shocks/global demand shifts.
- Timing of the Referendum.

Impact of Brexit trade policy uncertainty on UK exporters

Table: Entry into/ exit from exporting to EU: 2016 relative to 2015

	(1) Stock of exporters	(2) Entrants (1 year)	(3) Exiters (1 year)
Tariff rate	-0.00344***	-0.0105***	0.00459**
	(0.00127)	(0.00238)	(0.00217)
Quota	-0.0770**	-0.169***	0.189***
	(0.0303)	(0.0651)	(0.0612)
Specific duty	-0.0538**	-0.204***	0.0451
	(0.0244)	(0.0494)	(0.0488)
Constant	0.0519***	0.0813***	-0.00160
	(0.00815)	(0.0155)	(0.0144)
Observations	8,804	8,464	8,140
R-squared	0.002	0.005	0.002

Interpretation: Products facing a 10% threat point tariff will have 10.5ppt lower growth of entry into exporting than the implied 8.1% growth of entry in the zero tariff group, implying an overall growth rate of -2.4%.

Impact of Brexit trade policy uncertainty on UK exporters

Regression results using discrete tariff categories

Table: Entry into/ exit from exporting to EU: 2016 relative to 2015

	(1) Stock of exporters	(2) Entrants (1 year)	(3) Exiters (1 year)
Extreme threat point tariffs	-0.0720**	-0.224***	0.0987
	(0.0328)	(0.0698)	(0.0673)
High threat point tariffs	-0.0277	-0.132***	0.102***
	(0.0181)	(0.0360)	(0.0341)
Medium threat point tariffs	0.00431	-0.0137	0.0251
	(0.0147)	(0.0303)	(0.0295)
Low threat point tariffs	-0.0120	-0.0515*	0.0605**
	(0.0145)	(0.0285)	(0.0267)
Quota	-0.0695**	-0.162**	0.208***
	(0.0314)	(0.0673)	(0.0633)
Specific duty	-0.0464*	-0.198***	0.0640
	(0.0258)	(0.0523)	(0.0515)
Constant	0.0444***	0.0747***	-0.0205
	(0.0116)	(0.0230)	(0.0217)
Observations	8,804	8,464	8,140
R-squared	0.002	0.005	0.003

Interpretation: Products facing the extreme threat point tariffs experienced a 22.4 ppt decline in relative entry rate, compared to 7.5% growth of products facing no increase in threat point tariffs.

Quantifying the impact of trade policy uncertainty

Firm-product entry in 2016 would have been 5.0% higher and **firm-product exit 6.1% lower** if UK firms were guaranteed zero tariffs on exports to EU.

- Use regression coefficients and firm-product exporter statistics.
- Aggregating over categories finds 5,344 firm-products did not enter into the EU in 2016 relative to counterfactual.
- Using the average value of entrants (exporters) in 2015, reduced entry accounts for a £201 million (£1.5bn) loss of export value in 2016.

Including the loss from increased exit implies total missing export value of £394 million (£3.0 bn).

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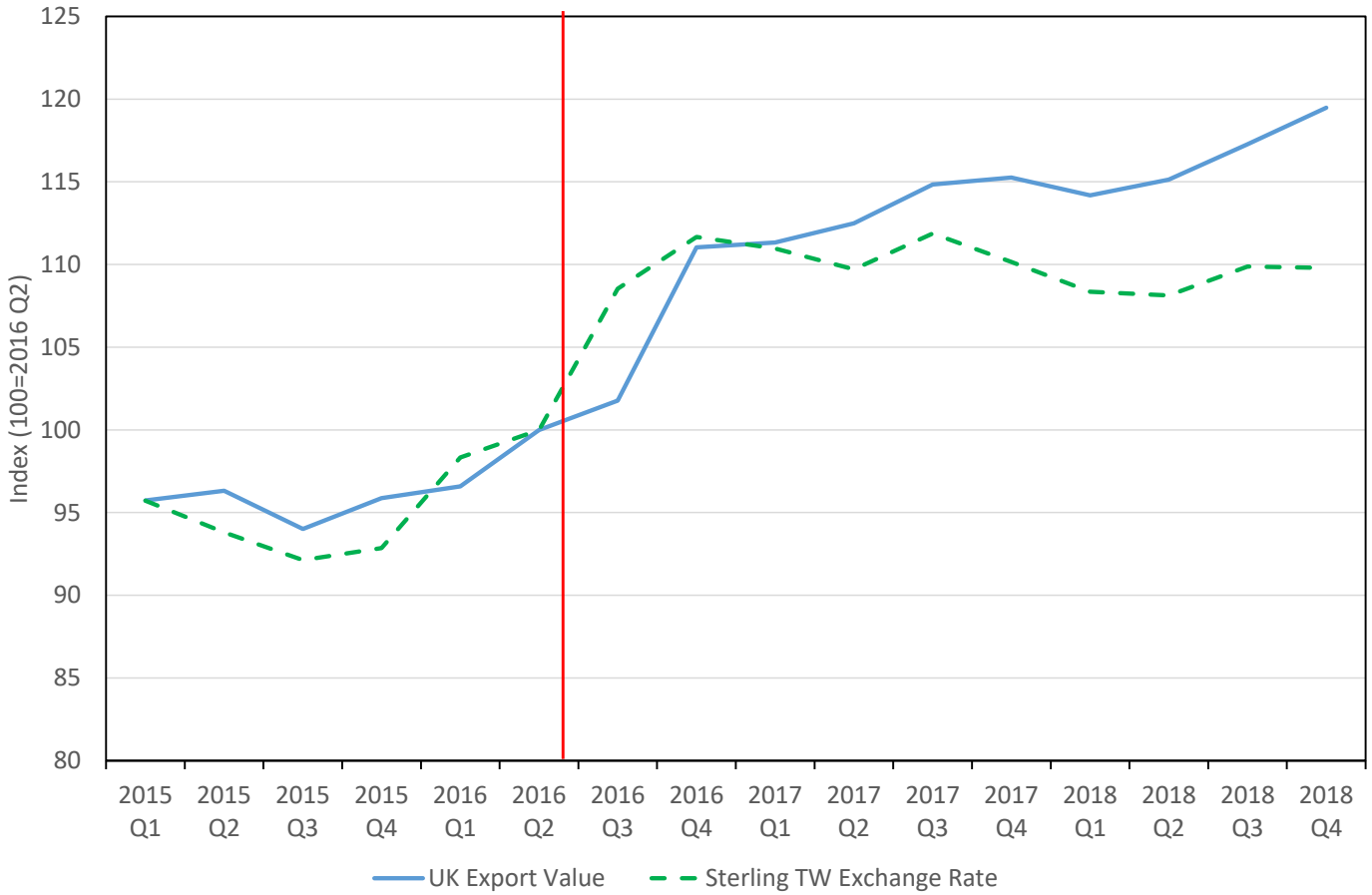
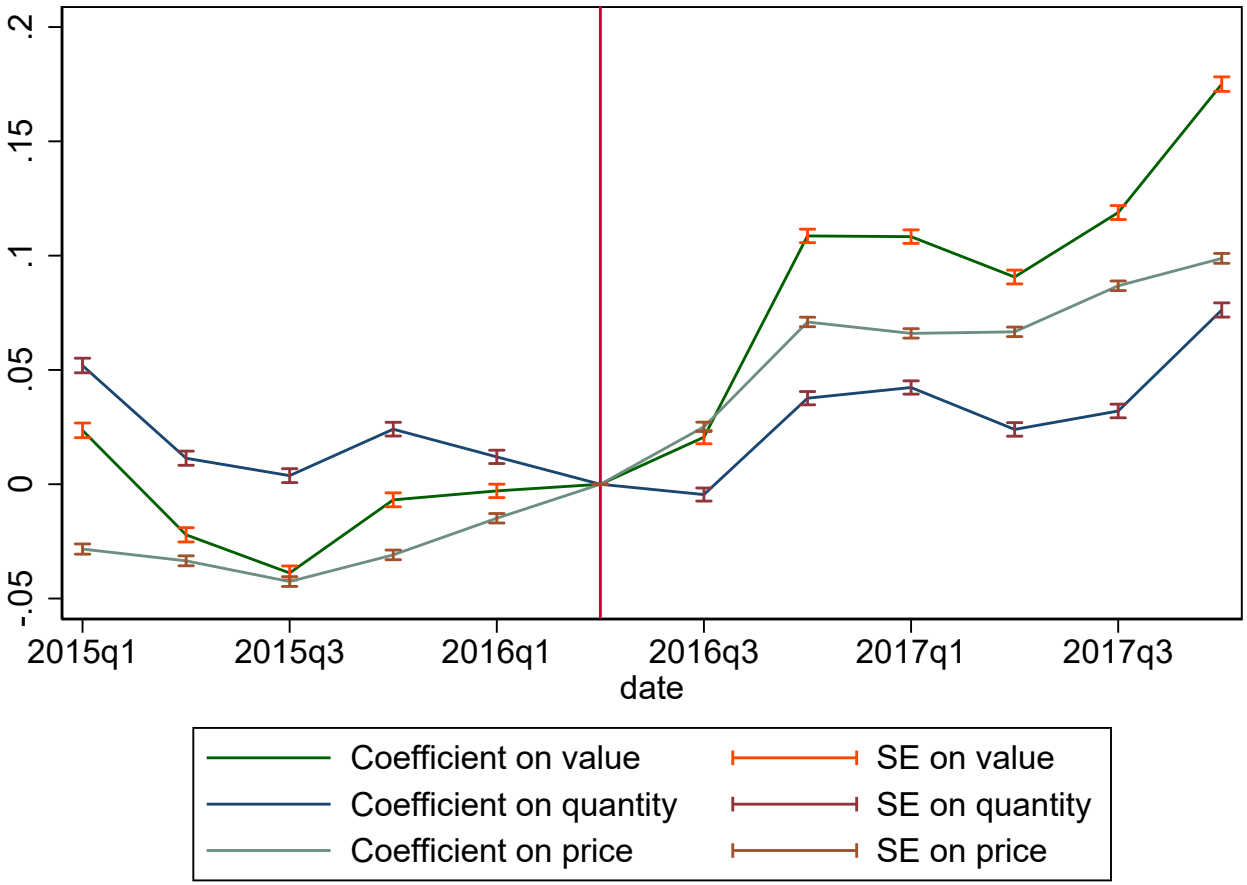
Figure: UK export value and exchange rate



Was the rise in exports driven by prices or quantities?

Figure: Event study of export response to Brexit Referendum



$$log(Y_{fidt}) = \alpha_{fid} + \sum_t \alpha_t D_t + \epsilon_{fidt}$$

Was the rise in UK exports driven by the exchange rate?

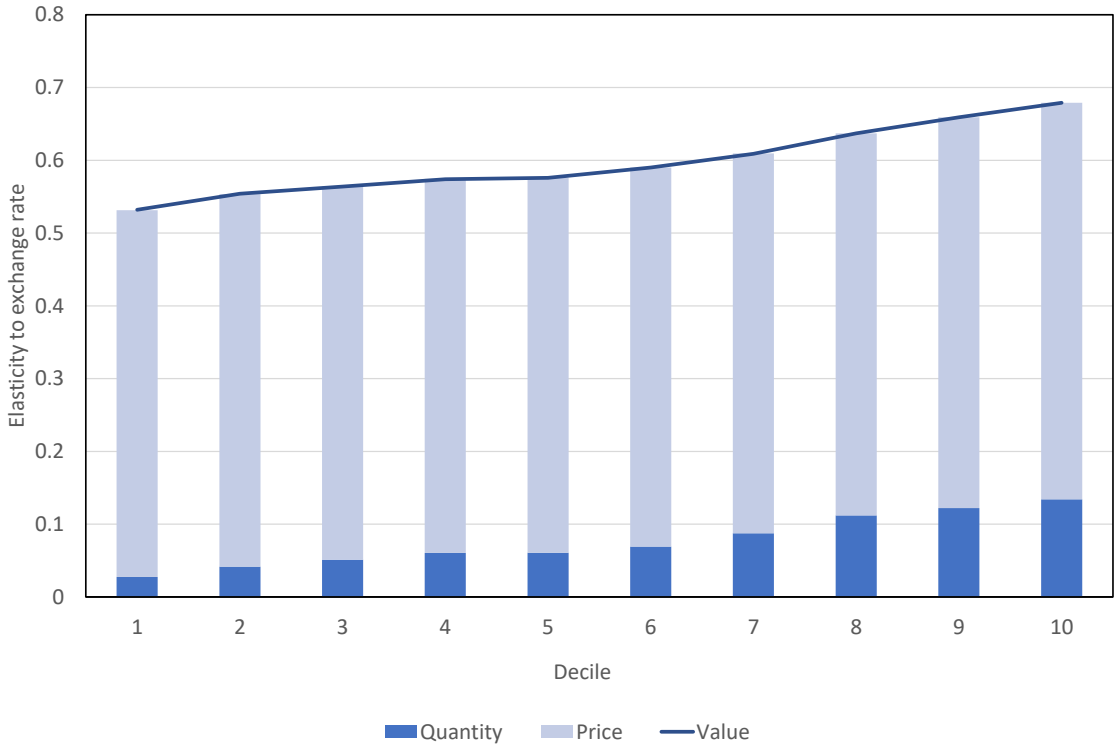
Table: Regression coefficient estimates of export elasticity to exchange rate

VARIABLES	(1) Value	(2) Quantity	(3) Price
Panel A: All exports			
Exchange rate	0.655***	0.115***	0.540***
	(0.00426)	(0.00425)	(0.00295)
Observations	12,293,201	12,293,201	12,293,201
R-squared	0.877	0.895	0.876
Sample	All	All	All
FE	f-p-d	f-p-dn	f-p-d

$$log(Y_{fidt}) = \alpha_{fid} + \beta_e Exchange\ Rate_{dt} + \epsilon_{fidt}$$

Which firms had the largest response to the exchange rate?

Figure: Exchange rate elasticity of value, quantity and price by exporter size decile



$$log(Y_{fidt}) = \alpha_{fid} + \sum \beta_s size_f + \sum \beta_{es} size_f * Exchange\ Rate_{dt} + \epsilon_{fidt}$$